

# The Role of Smoking on Patient with Multiple Sclerosis, Three Cases from Vlora City

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Received October 20, 2020; Revised November 21, 2020; Accepted November 30, 2020

**Abstract** Multiple Sclerosis (MS) is a chronic, inflammatory disorder of the central nervous system (CNS) with presumed autoimmune etiology. Lifestyle changes such as quitting smoking or reducing smoking doses, alcohol abstinence and maintaining healthy weight are important for treatment success. Smoking has negative effect on MS patients, by worsening symptoms, creating more relapses and making it harder to treat the disease. Smoking MS patients that quit, may improve their condition. **Method and materials:** this study is performed in the hospital of Vlore during 2019 and we interviewed three MS hospitalized patients. We used 15 questions interview to get the patients opinion and information. They voluntarily participated in this study. **Results:** We interviewed three patients, from whom two smoked and one never did. The condition of the patients who smoked clearly became worse from the smoking, while the patient who did not smoke had a better prognosis by keeping the condition stable. One of the patients who smoked had quit two years ago. The three patients were aware of the negative effects that smoking had on their condition. **Conclusions:** Life quality of two of our patients changed when one of them started smoking and when one quit, the third keeps on deteriorating. In Albania there is an undisputable need to conduct such studies in order to follow up patients with MS, their smoking and the effect that it has on the progress of the disease.

**Keywords:** MS, smoking, disease progress

**Cite This Article:** Evis Allushi, Gentian Vyshka, and Vasilika Prifti, "The Role of Smoking on Patient with Multiple Sclerosis, Three Cases from Vlora City." *International Journal of Clinical and Experimental Neurology*, vol. 8, no. 1 (2020): 9-13. doi: 10.12691/ijcen-8-1-3.

## 1. Introduction

Multiple Sclerosis (MS) is a chronic, recurrent inflammatory disorder of the central nervous system (CNS) with presumed autoimmune etiology [1]. MS is the most common neurological disability in young adults affecting around 2.5 million individuals worldwide [1]. Females are affected 2-3 times more than males and clinical symptoms typically first present in the third or fourth decade of life [2]. Medical treatment combined with rehabilitation procedures, and changes in lifestyle such as quitting smoking or even reducing smoking doses, abstinence from alcohol and maintaining a healthy weight are very important for the treatment success [3]. Studies have shown that many MS patients that smoke if they can quit the condition of the patient may be improved [4]. Data show that males smoke more than females [5]. Smoking has negative effects on health and patients with MS smoke a lot, and also is directly related to the disease progress. Among the 7000 and more components of smoke such cancer-causing Chemicals (Formaldehyde, Benzene), Toxic Metals (Chromium, Arsenic) and Poison Gases (Carbon monoxide, Hydrogen cyanide, Ammonia) etc. which do not increase only the risk of cancer,

cardiovascular and respiratory diseases, are directly toxic to the oligodendroglia and neurons, and they affect the immunity system [6,7]. Data of various studies show that smokers have higher risks to develop MS and experience symptoms and unfavorable complications [8].

"Smoking has been shown to accelerate brain atrophy rates in the early disease stages, including in patients with clinically isolated syndrome (CIS) [9]. Smoking is implicated in the pathogenesis of other autoimmune disorders and smoking patients with MS were more likely to develop another autoimmune disorder [5,10]. Passive smoking is also associated with an increased risk for MS. Modestly elevated cotinine levels suggestive of passive smoking are associated with an increased risk for MS. Passive smoking may explain the higher incidence of MS in women and children [11,12]. According to Cleveland Clinic smoking has been associated with the delay in the diagnosis of MS due to a few reasons; not seeking medical care, seeing multiple medical providers for other medical conditions and symptoms being "masked" by other medical conditions [13]. Also smoking at the time of clinically isolated syndrome was an independent risk factor for a future CDMS diagnosis [14]. Smoking is also directly linked to MS progression. Smokers are more likely to have frequent relapses and to advance from relapsing-remitting MS (RRMS) to secondary progressive

MS (SPMS), which is a more aggressive form of the disease [10]. A recent study showed that smoking should be further analyzed in order to understand the mechanisms with which smoking worsens the MS prognoses [15]. Also smokers with MS have more relapses and are in higher risks for bone fractures. Consequently, they have lower life quality, and have higher chances of having active MS [16]. There is a serious lack of information about the effect of different types of smoking habit on MS as well as the dose–response relationship between smoking and MS [16]. A study conducted from Oxford University concluded that smoking is associated with MS and there is a correlation between the habits of smoking and MS. They summarized the available evidence from observational studies addressing the association between different kinds of smoking habits and MS. Their results suggested that the smoking habits of any kind were significantly associated with an increased risk of MS, although the association was not very strong. Furthermore, there was a positive association between MS and the number of cigarette pack-years, indicating an apparent dose–response relationship between the severity of cigarette smoking and MS. When, a dose–response relationship is present, it favors a causal relationship [17].

There are many studies in the world conducted on the effects of smoking and MS patients [18,19,20,21,22], but in Albania there are very few old studies that show the prevalence of MS, but there are no studies to show the relation of smoking with MS, or any other correlation of this kind [23,24]. This study aims to present the cases of three MS patients from Vlore City and the effects of smoking on their disease progress.

## 2. Method and Materials

**Setting:** This is presentation of three cases of MS patients, their relation with tobacco and the impact of smoking on their situation. The study was conducted in the hospital of Vlore. During the last five years (2015-2019) in this hospital are hospitalized 50 patients with MS. Our study took place in 2019, in three different time period, in February, June and October, 2019 where in the hospital, in the pathology ward were hospitalized only three MS patients. The information about their hospitalization was received from the head nurse whom I have stayed in contact throughout the study time period.

**Sample selection:** Since the aim of our study was to interview patients with MS, we interviewed these patients as they were the only ones hospitalized, with the only criteria of the diagnosis with MS. Hospitalization of MS patients is scarce in the hospital of Vlore as these patients are usually treated in Tirana hospitals.

**Data collection:** The data was collected using a semi-structured interview for each patient. The semi-structured interview had 15 questions. We started with the general questions such as age, age of patient when diagnosed, the progress of the disease actually, did they smoke and when did they start to smoke, how many cigarettes they smoke per day, a short description of the history of smoking, and their quitting history if they had any. Then the other questions were about their opinion of the smoking impact in their disease. All the questions were equally important.

The interview was done when the patients felt comfortable, not fatigued and rested, based on their statements. We tried to conduct the interview after breakfast, and not when the patients were in therapy. There were some moments when the patients were tired, so we let the patients rest and started again when the patient was ready. Each interview lasted for 35-45 minutes and during the interview a family member was also present.

**Data analysis:** The data analysis was conducted by carefully studying the answers of the patients, keeping notes on everything the patients stated. We kept detailed notes of the answers of the patients and later we extracted the most important data needed—Ethical issues: All of our patients were in care of family members the whole time so before the interview we required permission from the patients, family members, and from the head nurse. We ensured the patients and their families that all the information received would be confidential and to be used strictly for study purposes and not for other reasons.

## 3. Results

In this presentation, we tried to bring the cases of three MS patients who in different time periods were hospitalized in the Hospital of Vlore during 2019. The emphasis of these interviews was to show the impact that smoking had on their disease progress. One of the patients never smoked, while two of them did.

**Case A:** 52 years old female, married with a child, unemployed. She was diagnosed with MS at the age of 32, smoker for 15 years (she started smoking when she was diagnosed with MS quitting and restarting several times. She quit completely in 2017. Besides the inability to walk, she had a normal life (within limits that the disease allows). Regarding her disease and smoking she agrees that quitting has made her condition better.

*“I started smoking when at the age of 32. Initially I used to smoke two cigarettes per day, and later more than a pack.*

*It seemed like for those two minutes of smoking I forgot about the disease.*

*During this time I tried to quit smoking, as my family really insisted about this.*

*The feeling of depression and not being well stayed with me even when I smoked.*

*I also felt very tired and not able to exercise even for a few minutes.*

*At the time of smoking my lungs felt worse for a few months, and the disease kept getting worse.*

*The stability I used to have was gone and I kept feeling worse and worse.*

*The family and especially my daughter kept telling me to quit smoking without getting tired, and they made me understand that I should quit smoking immediately.*

*But in reality I felt that smoking was stronger than me and I was having a really hard time.*

*I quit smoking two year ago and I am really feeling better.*

*My lungs are functioning better and I can do some exercises, which are very important for my condition.*

*Even though I knew that smoking was bad for me it was hard to quit. My family got information on how to quit, and*

*what were the effects that smoking had on my disease and overall health. I have watched television shows on smoking effects on normal people and it finally hit me that I should quit immediately. During the years I really wanted to have more contact with other people who suffer from this disease, and to talk about the resources we might have. Don't get me wrong, my family has been so close to me and have helped me every moment, but sometimes there were not able to understand the way I feel.*

**Case B**, 39 year old male, was diagnosed with MS when he was 30 years old, with a rapid onset of the disease.

We met the patient when we were conducting the study in the hospital of Vlore in June.

The male patient wassingle, with high school education, lived in a village, unemployed for a long timeand had been a smoker since he was 20 years old, so he had been smoking for 19 years.

He felt tired, with fatigued legs, loss of balance, dizzy, urinary incontinence andunable to walk.

The patient was very hard to manage, refused the medications, continued to smoke (less than before, but the room still smelled like smoke) and did not want to be in much contact with the medical staff.

We asked the patient if he was aware on the impact that smoking might have on his condition.

*"I started smoking when I was 20 years old. All my friends used to smoke, so did I. I was strong, happy, worked a lot and took care of the family.*

*During this time, I smoked one packet of cigarettes per day and sometimes even more. When I was diagnosed with MS my life turned upside down.*

*I was very tired all the time and did not know why. I started to increase the number of cigarettes I smoked.*

*Everybody told me to quit, but nobody knew how smoking made me feel, it is my only friend. I have smoked since I was 20 years old, how can I quit now?*

*There is no way I can quit. In fact, I tried to reduce the numbers of cigarettes when I felt better, but no, I will not quit all together.*

*What will the village people think if I quit smoking?*

*My condition is never going to get better, so do not tell me to quit. I do not want information on this, I do not want the nurses to give me advice on how to quit. I simply do not want to quit".*

When we asked the patient on the disease progress he stated: *"My health condition is never going to get better, every year that passes makes me feel worse, especially these two last years. In the beginning when I was diagnosed, I tried to follow an exercise program, but us needed a care giver and I did not have any money to pay. I could not follow the program myself as I felt really tired. I live in the village and people there judge me a lot. They do not understand this disease and I simply try to stay in the house most of the time. I have done some medical tests as an MRI, but it did not show any improvement, I felt really bad, and my mother was hopeless too. Sometimes I feel very depressed, not like now that I am talking to you. We really need help, financial help, and the money the state gives me as a paraplegic status is spent for my cigarettes".*

**Case C**, a 50 year oldfemalewas diagnosed with MS when she was 17 years old. She is a medical doctor and

has always been very careful about her health. The first sign of SM was having double vision. Up to 2000 she suffered a remitting relapsing form of MS, after this year she suffered from the secondary progressive form. Actually she cannot walk any more.

*"When I was diagnosed with MS for a moment it crossed my mind to try smoking even though I knew all the negative effects. I had never smoked before, but the shock I got from this horrible diagnosis made me think this way. I began to say in a loud voice that I had to run away from fatigue, stress, anxiety, but when the doctor asked me about my feet, the tone of voice declined because I didn't feel any improvement in walking. The doctor immediately understood me, calmly and very friendly said not to get tired of standing with difficulty, I would only get tired and not achieve anything, sit in the chair and continue to live without fatigue, without anxiety, without stress...At those moments, my doctor moved toward the balcony where another patient was secretly trying to smoke, but when he noticed the doctor he immediately threw the cigarette away. At that moment I told the doctor that maybe smoking might help me calm myself. Slowly the good doctor took a cigarette from his drawer and handed it to me. He said that if I thought that the cigarette would help me I was free to try it. Then I kept thinking about smoking, but maybe being a doctor myself kept me from trying. At first I didn't like what I heard about my disease, but it made me understand a lot. I sat in my wheelchair, forgot smoking, fatigue, anxiety, boredom, and now I live and enjoy what I do and everything I have.*

In 2015 the patient had an MRI, which compared with that of 2012 showed that there were no new elements, which showed no progression of disease during this period.

The patient states: *"A few years ago I followed an exercise program in Ianina, and they gave a set of exercises to follow. I get tired very easy and cannot do them myself. My caregiver helps me to do some of them. Personally, I am an online member of MS groups of patients. I read neurological journals for the news on the disease. I wish I could attend to a rehabilitation center. The family has never abandoned me but I feel a burden to them. The money I get from the state are not enough for the expenses of my life. I have never smoked in my life and I think that this has had a positive effect on my disease, and this I have read in different medical papers. I wish I could tell other patients to quit smoking, as it only brings harm and no good, not only for us but to all humans. I hope the state will remember us and not leave us to challenge this dreadful disease by ourselves".*

## 4. Discussions

Looking at the three patients we noticed that two out of our three patients have been smokers since early ages. Patient A smoked for 15 years and quit smoking in 2017, she lost the ability to walk, has been hospitalized a few times, but since she quit smoking her breathing has become better, Case B has been smoking for 19 years and still smokes, suffers from mood swings, depressed most of the time, does not leave the house and actually is hospitalized for worsening of the disease. Since he has smoked for so long, this might be a fact that smoking may

have had a negative impact on the worsening of the symptoms. Case C never smoked in her life, feels good with herself, the disease in in stable condition and she has a desire to live better, learn more about the new therapies and to transmit to others the negative effects of smoking on the disease. All three patients state that they need the state to help them more financially.

The reason why the patient A started to smoke was the burden of being diagnosed with MS. The effect that smoking may have had on the progression of the disease is heard to be estimated, but we can say for sure this patient, who quit smoking, remains in a stable condition without any relapses. Patient A has had lots of support from the family and she has tried to quit smoking while she was suffering from MS, and during the time she smokes she felt worse, could not exercise, had worsening of her lung function. This finding relates to the study from O'Gorman C et.al 2014 who concluded that patients who smoke had the highest probability of worsening MS compared with the patients who did not smoke. The researchers thus concluded that smoking exacerbates MS [25], and in relation to our case probably quitting smoking may be one of the reasons that the condition of our patient is stable.

Hedstrom et al 2016 states that both smoking and exposure to passive smoking contribute to MS risk in a dose-dependent manner. They found that at the population level, 20.4% of all cases were attributable to smoke exposure. Among subjects in this study, 41% of the MS cases were attributable to smoking. They also stated that informing the patients for the smoking effects and its impact on MS plays a major role in the prevention of MS symptoms [26]. Our patient stated that there was a moment in her life when she was diagnosed that she started smoking. She did not smoke for long, and when she quit, she noticed that her condition got better. This finding is similar to the literature where Ryan Ramanuja, et al, 2015 states that smoking secession greatly affects the symptoms of MS [15]. Patient B has gone through a lot while being sick with MS. One of his major complaints was that he inherited the disease from his family. But the fact of him being a smoker and being around smokers all of his life may have been a reason why this patient developed MS. The same conclusions are found in the literature where passive smoking is estimated to be a risk factor for having MS [26,27].

The course of the disease has worsened with the passing of time, the patient has been very noncompliant with the treatment and furthermore, has never tried to quit smoking. The worsening of the disease may be because of the smoking, and also because the lack of physical treatment. The finding of this case goes in the same line with the conclusion of the study conducted from Healy BC et.al. which show that current smokers had significantly worse disease at baseline than never-smokers in terms of Expanded Disability Status Scale score (adjusted  $P < .001$ ), Multiple Sclerosis Severity Score (adjusted  $P < .001$ ), and brain parenchymal fraction (adjusted  $P = .004$ ). In addition, current smokers were significantly more likely to have primary progressive MS (adjusted odds ratio, 2.41; 95% confidence interval, 1.09-5.34). At longitudinal analyses, MS in smokers progressed from relapsing-remitting to secondary progressive disease faster than in never-smokers (hazard

ratio for current smokers versus never-smokers, 2.50; 95% confidence interval, 1.42-4.41) [28].

Furthermore, R. Zivadinov, et al. 2009 showed that many patients who smoked had problems in their brain atrophy. This might be a reason why this patient who never quit smoking continues to get worse every year. Taking a closer look at our third case, the female patient who never smoked, we saw that her condition did not get worse during the passing of time. There might be many reasons why, but one of the undisputable factors is the fact that she has never smoked and has kept herself busy with physiotherapy. Such good effects of nonsmoking in MS patients are found in the study conducted from O'Gorman C et.al 2014 who also stated that nonsmoking status plays a role in keeping the disease stable among other things. Also Farren BS Briggs et al. 2016 states that smokers with MS have greater decrements in quality of life and disability than non-smokers [25,29].

## 5. Strength and Limitations

This is a study that is really unique in its kind for the Albanian settings especially in the city of Vlore, as we cannot find in the literature any studies in Albania that link the condition of MS patients with smoking. But, in the meantime the conditions of the interviews are really hard for the patients. A limitation to this study is that more patients are needed to present the relation of smoking with MS patients here in the city of Vlore, but the number of patients hospitalized in the hospital of Vlore is really low, as most of the patients are treated abroad or in Tirana hospitals. This study included only hospitalized patients as they were easier to find, while there are more patients treated at home who may have smoking issues and could give important information for our study.

## 6. Conclusions

Looking at our modest cases, we surely cannot conclude that smoking causes MS but one thing is for sure, smoking makes MS worse.

The quality of life in two of our patients has changed a lot when one of them started smoking and also when she quit, and for the other keeps on deteriorating depending on many factors and among them being the fact that the patient has always been smoking.

In Albania there is an undisputable need to conduct such studies in order to follow up patients with MS, their smoking and the effect that it has on the progress of the disease.

## Acknowledgements

This article has no funding from any sources.

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